

**AMENDMENTS TO THE SPECIFICATION**

Please amend paragraphs [0008], [0014], [0028], and [0041] of the Specification as indicated below:

**[0008]** The invention consists of a tunable continuous wave (CW) laser source, an optical circulator, ~~a an~~ semiconductor optical amplifier (SOA), and a spectral filter that has a very sharp cutoff frequency. In alternative embodiments, the filter may be replaced with an interleaver that passes several wavelengths. A single interleaver may be used by several of the optical regenerators/converters described herein. Each regenerator uses a separate wavelength that is associated with a passband frequency of the single interleaver. An interleaver has a periodic nature in which the blocking and transmitting sections of the spectrum repeat over a pre-specified frequency span, such as every 100 GHz.

**[0014]** FIGURE 1 is a high-level block diagram of a system incorporating an ~~and~~ embodiment of the present invention;

**[0028]** Referring again to FIGURE 1, system 100 may be used in an optical network to connect optical fiber links. Input signal 101 has traveled through a portion of the optical network and has become degraded and noisy. Accordingly, input signal 101 needs to be regenerated and possibly converted to a new wavelength. Circulator 106 guides input signal 101 into SOA 105. At the same time, CW signal 104 enters SOA 105. Input signal 101 and CW signal 104 counter-propagate within SOA 105. If input signal 101 has no "1" bits in its content, then it does not ~~effect~~ affect the wavelength of CW light 104 passing through SOA 105. In that case, no light passes out of system 100 because the CW light (108) is blocked by filter 107.

[0041] FIGURE 5 is a block diagram of system 500 for providing simultaneous regeneration and conversion for multiple input signals 505-508. System 500 is a multi-wavelength regenerator and wavelength converter. Every input signal 505-508 is processed by its own regenerator and conversion circuit 501-504, respectively. Each of circuits 501-504 are similar to systems 100 and 300 in FIGURES 1 and 3. However, in system 500, regeneration and conversion circuits 501-504 share interleaver 301. Circuits 501-504 receive input signals 505-508 and, in the manner described above, regenerate and ~~convert~~ convert input signals 505-508 to signals 509-512. Instead of using separate filters or interleavers for each wavelength, system 500 combines signals 509-512 in coupler 513 and feeds combined signal 514 to a single interleaver 301.